

RECOVERING ANCIENT INSTRUMENTAL DATA:

**The example of the logbooks of ships of the
Honourable East India Company (1785 – 1833)**



Presented by Dennis Wheeler

University of Sunderland



Alexander Dalrymple: hydrographer to the East India Company and mentor to Francis Beaufort

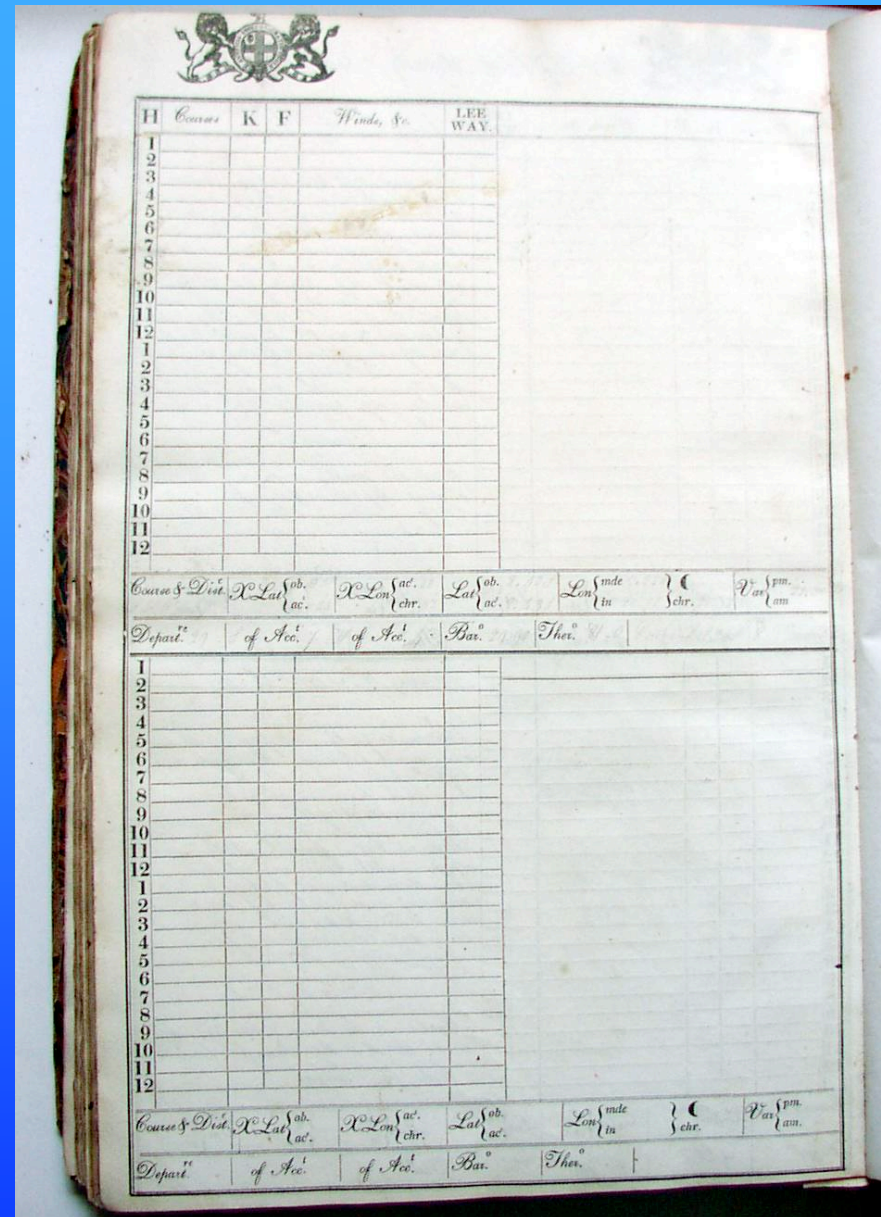
From c.1780 Dalrymple instituted a system for officers of the Company to make daily records of air pressure and temperature. These records were in addition to the standard wind force, wind direction and weather notes that had been part the daily duties on an officer since the early eighteenth century.*

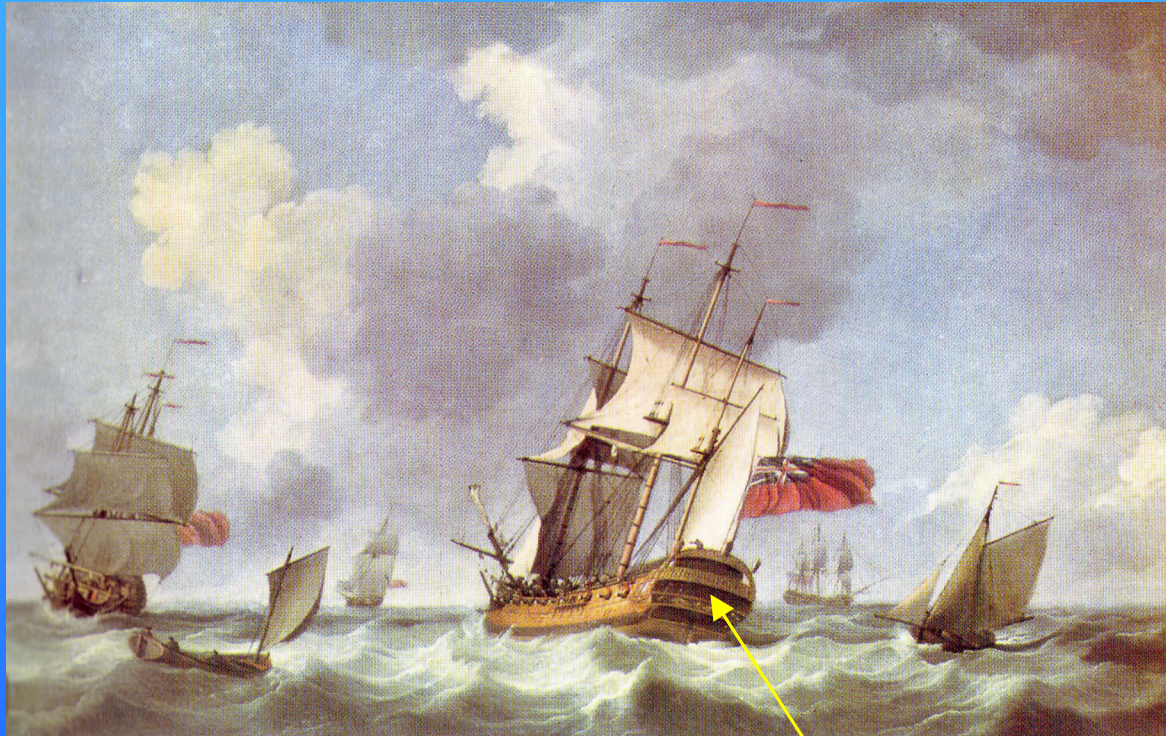
* See: Journal of a Voyage to the East Indies in the ship *Grenville* in the year 1775. *Phil. Trans. Royal Soc. London*, volume 68, 1778

New printed logbook pages were prepared on which officers were expected to complete their records.

Weather records for wind force and direction were kept throughout the day, sometimes hourly.

Air pressure and temperature were recorded at midday – the start of the 'nautical' day when all important navigational readings were taken.





*East Indiaman in
fresh breeze*

by

Charles Brooking

Ship's balcony – generally
the private area for the
captain

A case study: the return voyage of the *Hindustan* from London to Canton: June 1799 to September 1800.

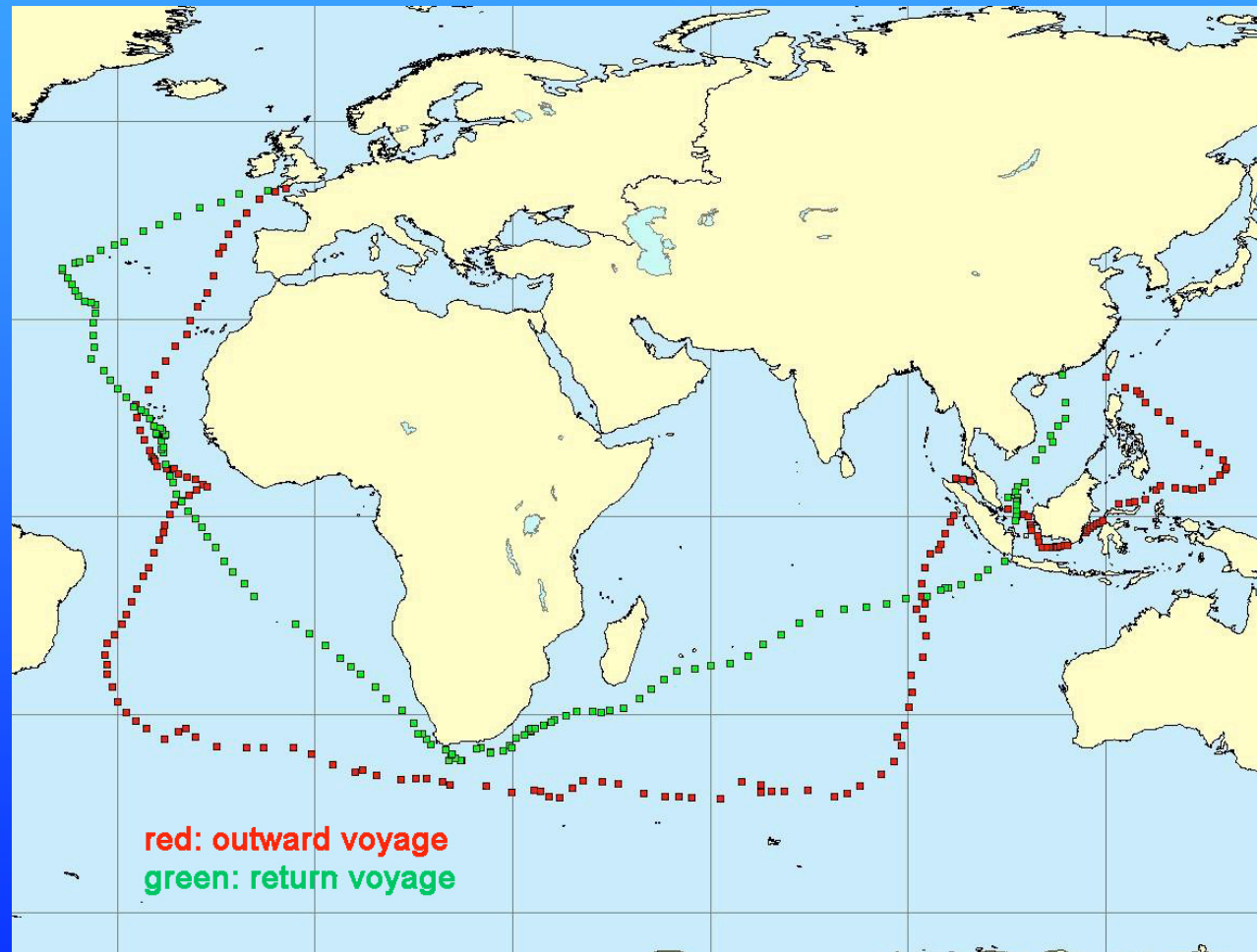
Under command of Captain George Millet



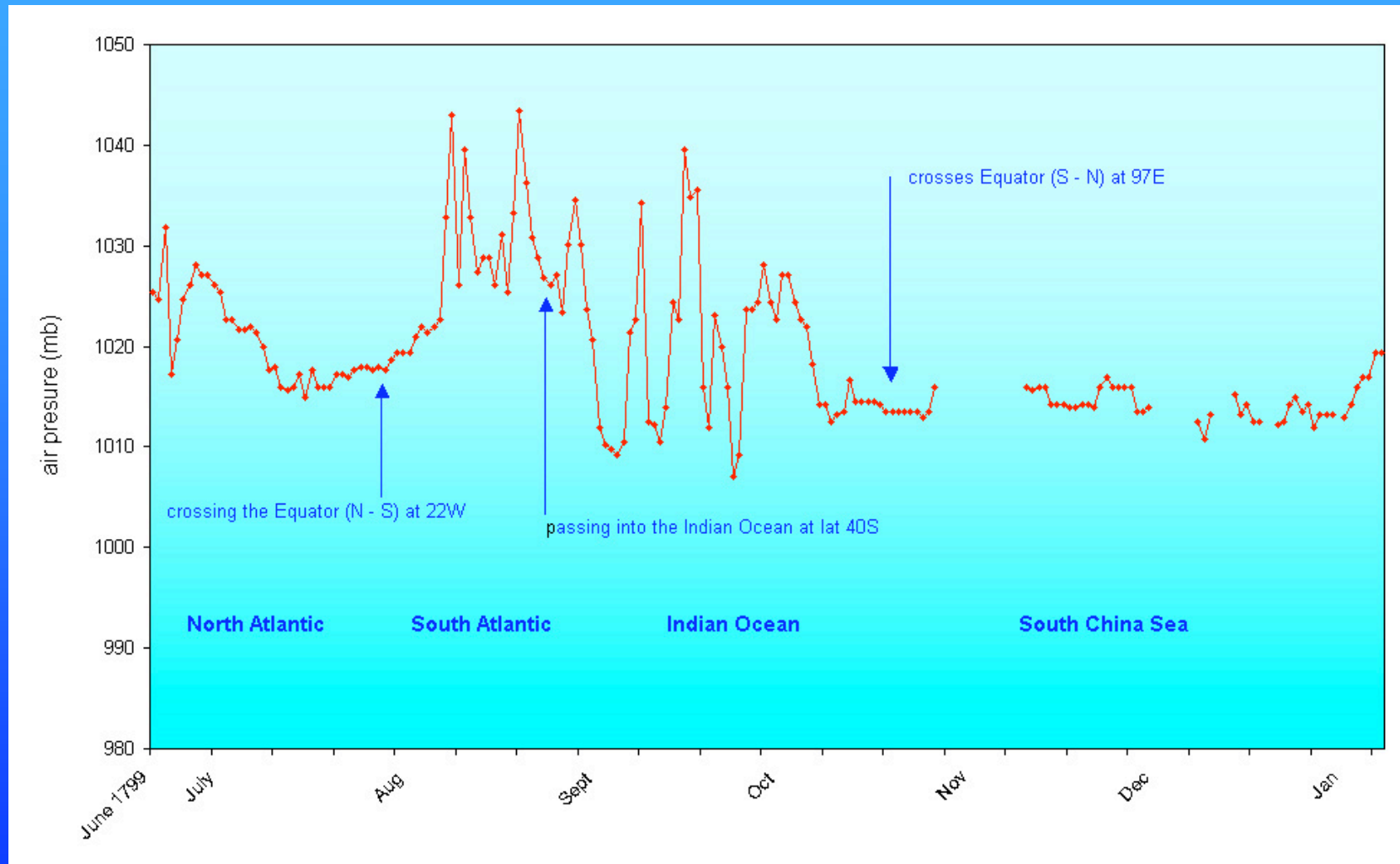
Ships of the East India Company by Nicholas Pocock (1803).

Outward journey: June 20th 1799 to January 10th 1800 from London to Canton, providing 176 daily records.

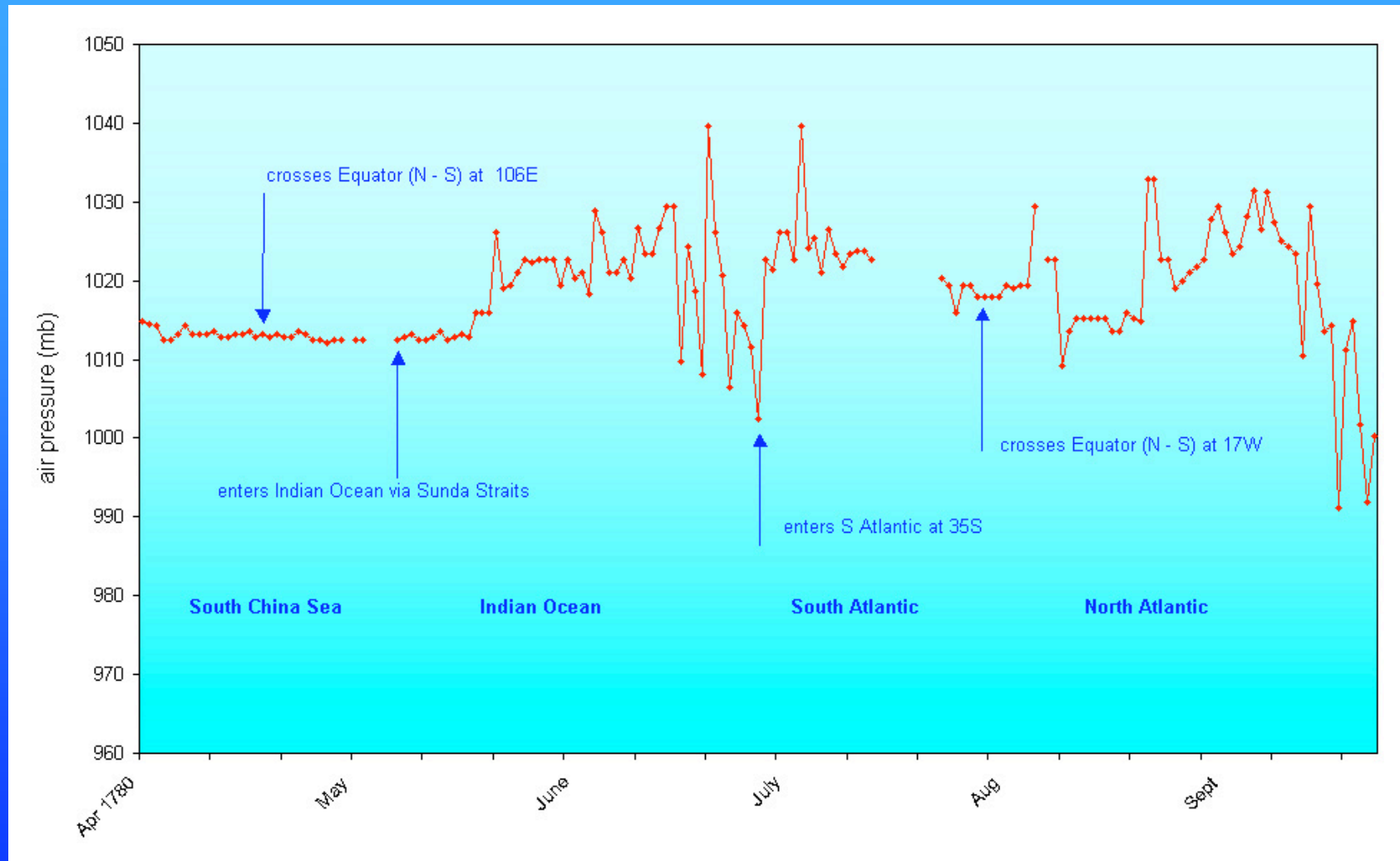
Return journey: April 1st to September 23rd 1800, providing 162 daily records.

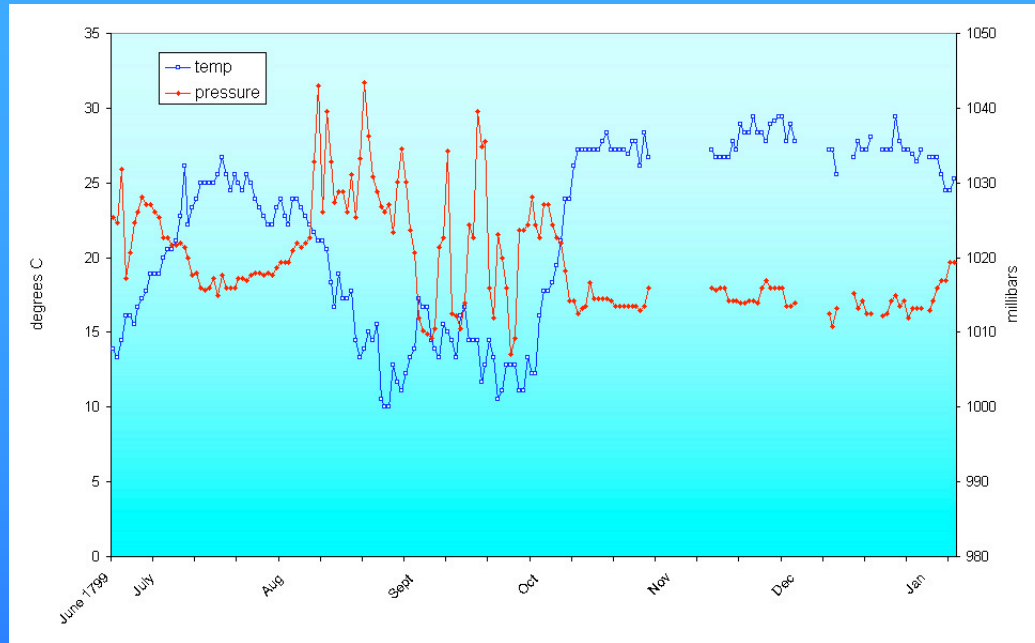


Air pressure plot (uncorrected) for the outward voyage



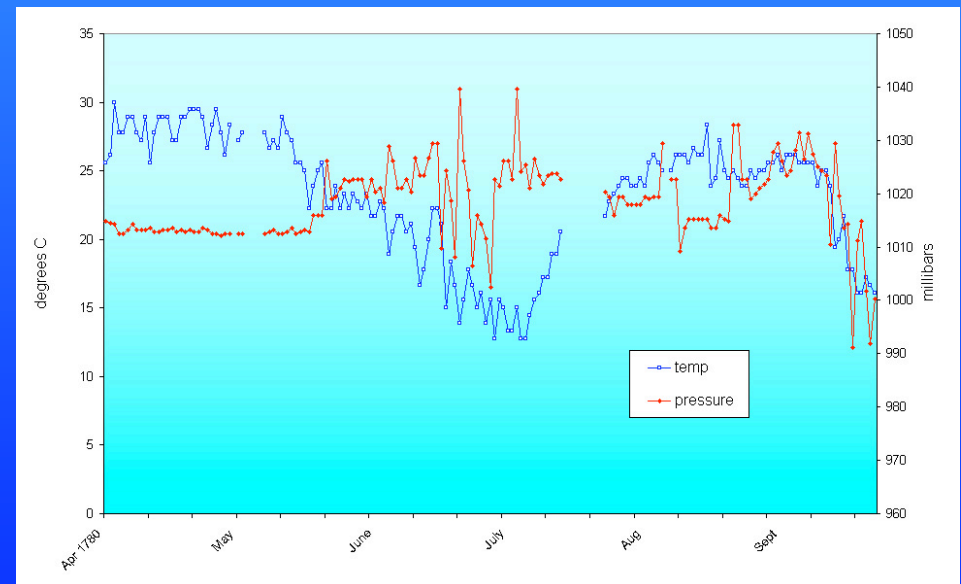
Air pressure plot (uncorrected) for the return voyage





Outward voyage: air pressure and temperature plot

Return voyage: air pressure and temperature plot



Summary of voyage air pressure data

voyage	days of data	mean air pressure	maximum	minimum	standard deviation	% errors
outward	176	1019.5	1043.3	1007.1	7.1	6.3
return	162	1018.5	1039.6	991.2	7.1	4.9

PROBLEMS AND CAUTIONS

Inscription errors:

6% on outward voyage

5% on return voyage

e.g. 30.9 instead of 30.09 or 30.8 instead of 29.8

or, even, 39.9 instead of 29.9

These are usually identifiable when plotted in graphical form and can often be verified by cross-reference to other entries for the day force wind force etc.

Metadata:

work still needs to be completed to determine the type of instruments in use and their exposure.

Seasonality:

because vessels timed their sailings to take advantage of the Monsoon circulations, the data are not distributed equally through the year

THE FUTURE

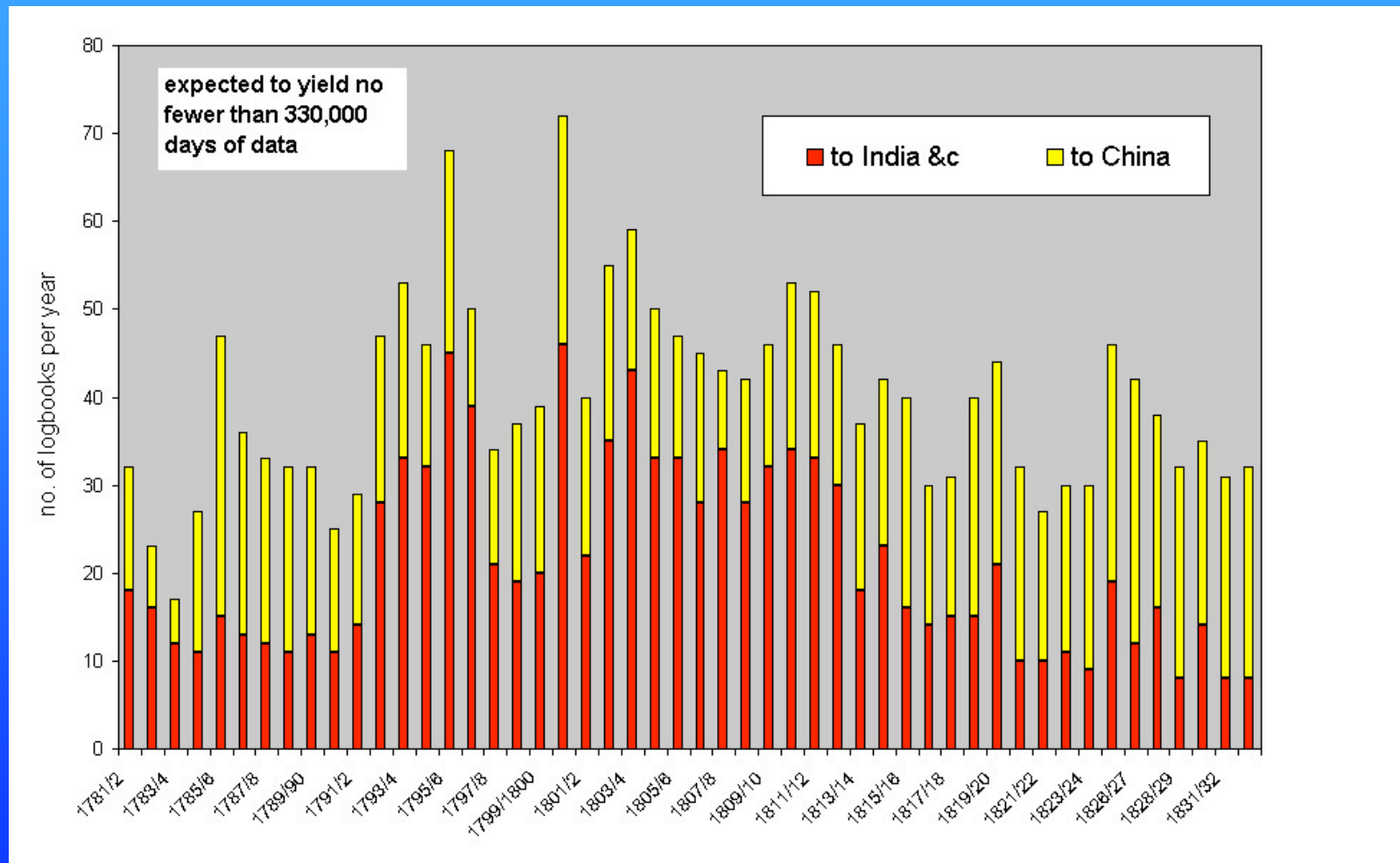
There are over 1950 EIC logbooks for the period 1780 to 1833 in the British Library.

At least 60% of them contain daily instrumental data (they all have wind force and direction data)

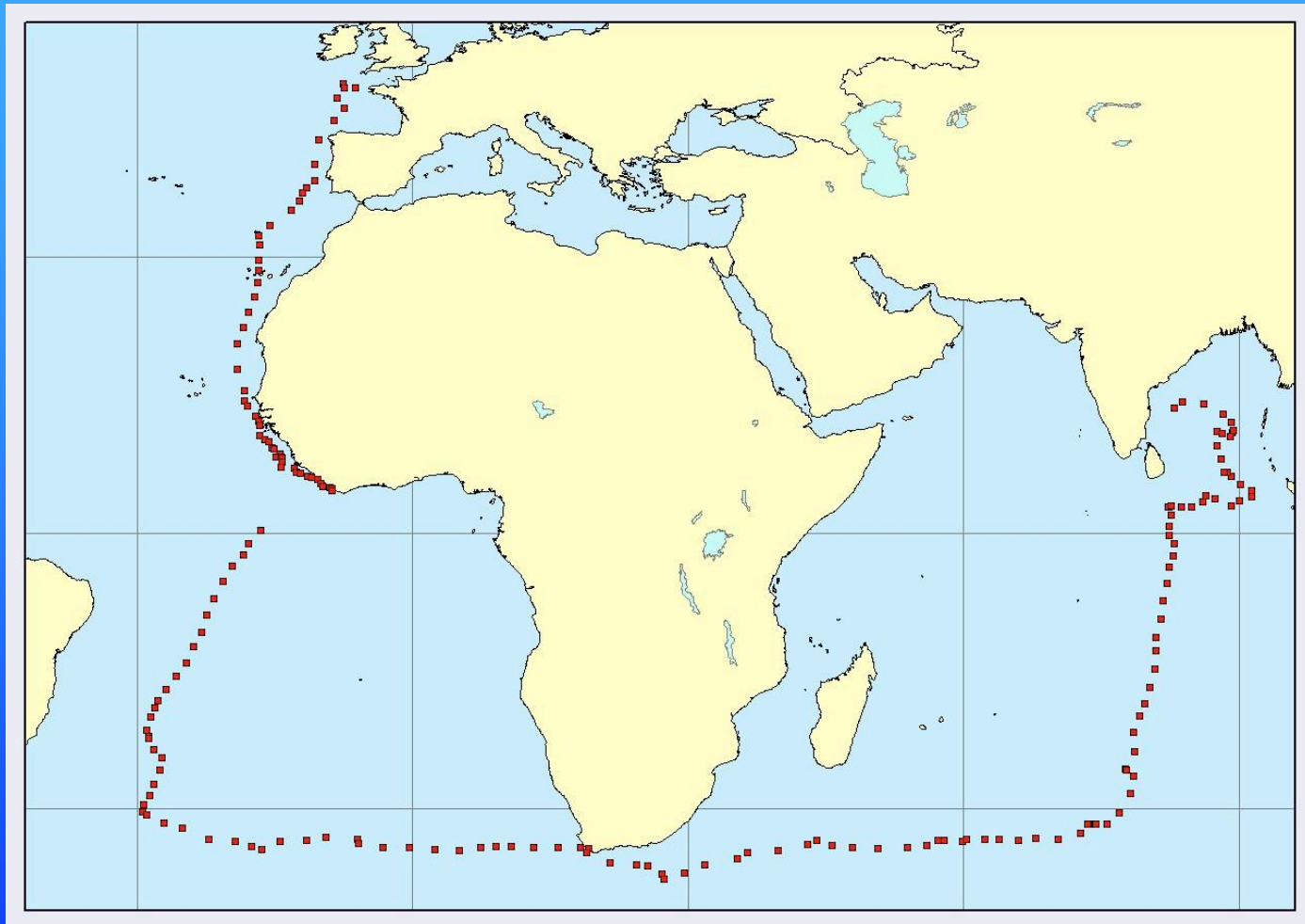
With an average journey time of 300 days, this will provide:

330,000 days of data for the Indian, North and South Atlantic Oceans

Graphical summary of logbook availability for the period 1780 to 1833



Case study (2): the voyage of the *Grenville* to India (1775)



The route: 1st May to 3rd December 1775

Observations were made by Alexander Dalrymple, using:

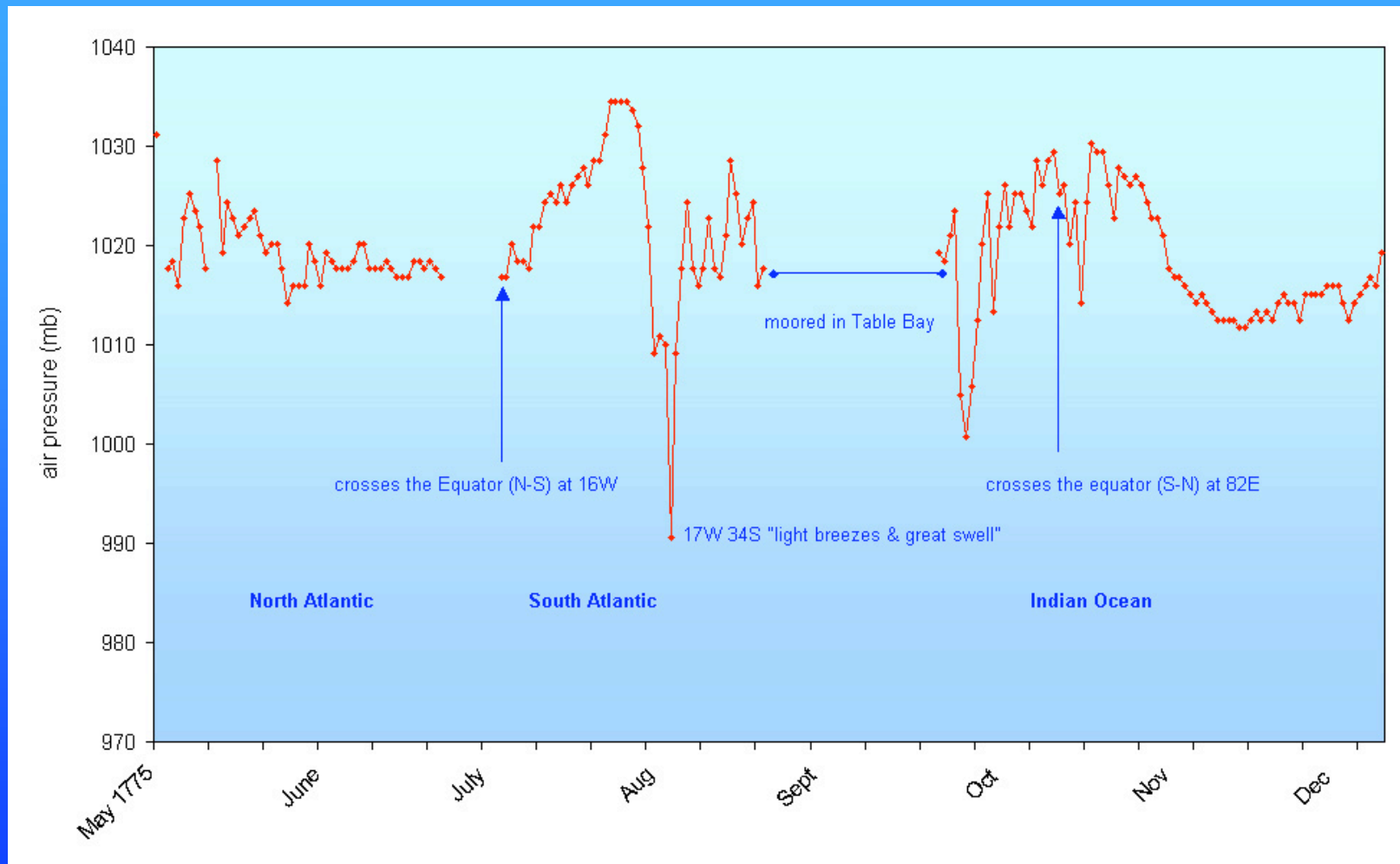
1. three barometers (two with mercury, and one of *“quicksilver, and of a lighter fluid, for the purpose of making variations more visible”*)
2. A free-standing thermometer
3. A thermometer attached to one of the barometers

Summary of results:

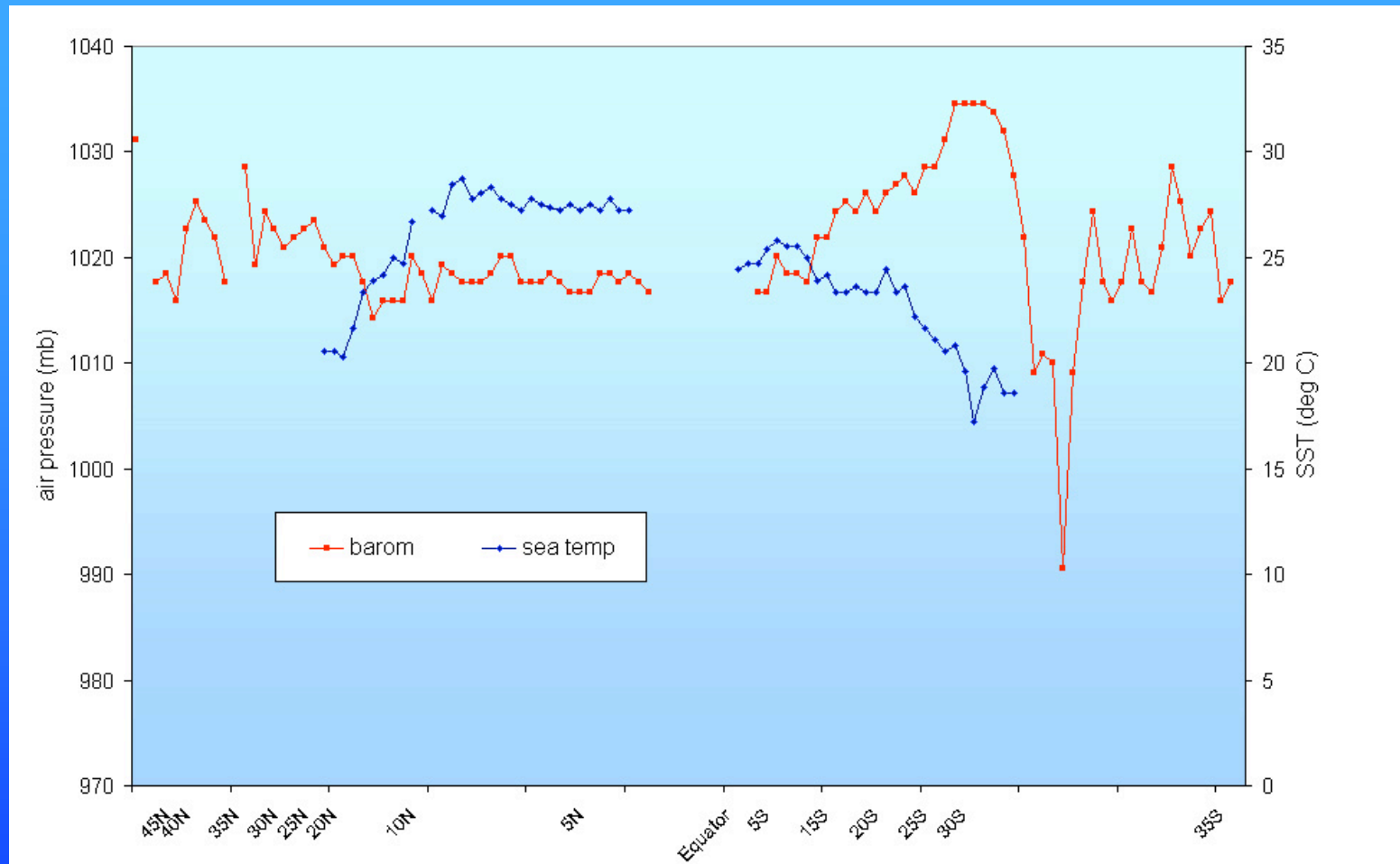
	mean (mb)	max.	min.	st.dev.
barometer 1	1021.5	1036.2	1013.4	5.9
barometer 2	1020.3	1034.5	1011.7	5.8
barometer 3	1019.1	1032.8	1010.0	5.6

	mean (deg.C)	max.	min.	st.dev
balcony thermometer	24.0	29.2	13.9	4.2
attached thermometer	23.9	29.4	13.9	4.2

Results: graph of air pressure

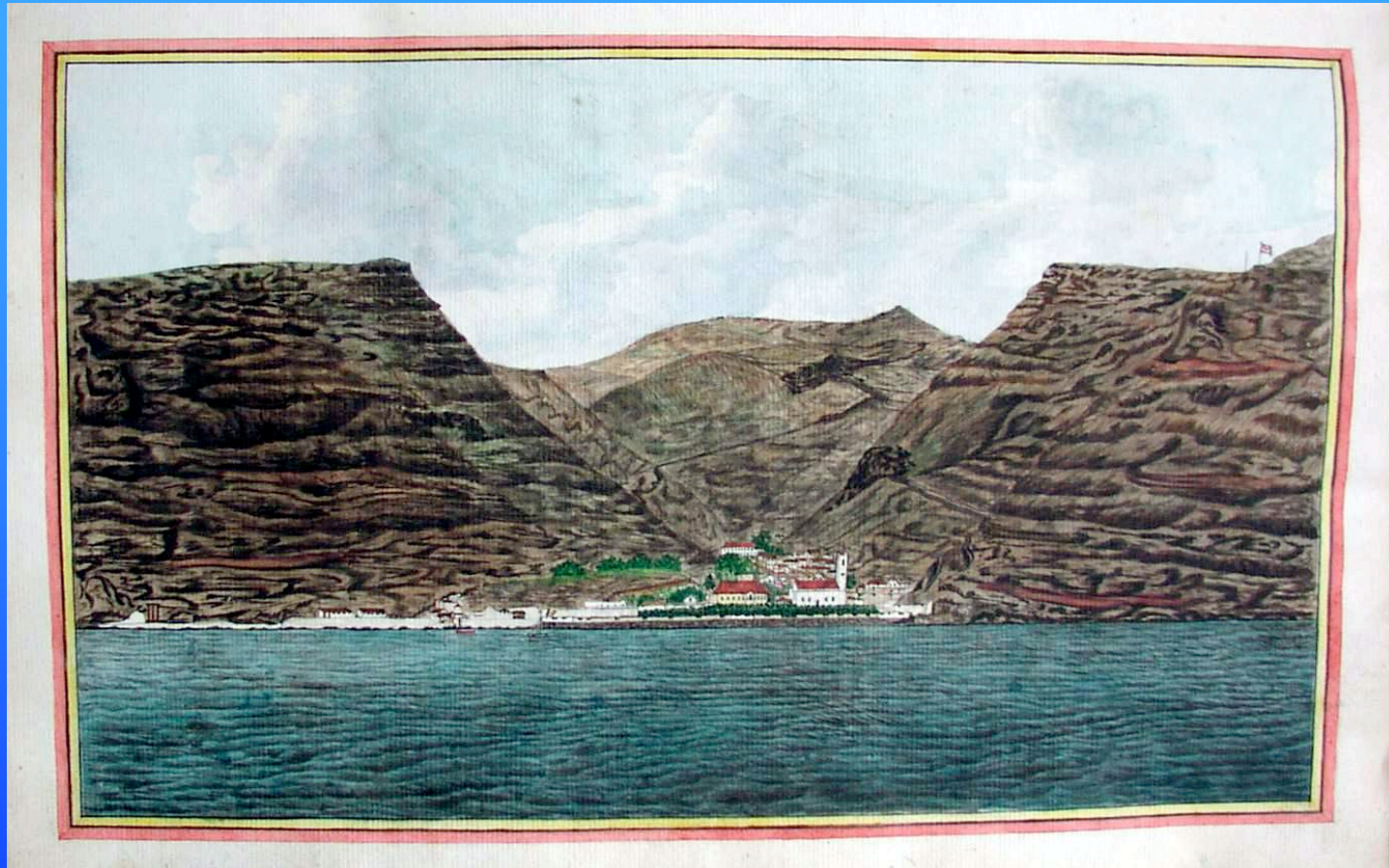


Results: graph of Atlantic air pressure and sea surface temperatures*



* Sea surface temperatures using water “taken up by a bucket at noon, and the thermometer immersed in the bucket for some minutes”.

Thank you



Water colour of St Helena, c.1800 prepared an EIC officer